

## Introduction

The AER is required to publish the reasons for significant variations between forecast and actual price and is responsible for monitoring activity and behaviour in the National Electricity Market. The Electricity Report forms an important part of this work. The report contains information on significant price variations, movements in the contract market, together with analysis of spot market outcomes and rebidding behaviour. By monitoring activity in these markets, the AER is able to keep up to date with market conditions and identify compliance issues.

# Spot market prices

Figure 1 shows an overview of weekly spot prices for the relevant week. This figure highlights the large number of price spikes in the Queensland region.



## Figure 1: Weekly spot price overview

Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.



Figure 2: Volume weighted average spot price by region (\$/MWh)

Table 1: Volume weighted average spot prices by region (\$/MWh)

Region	Qld	NSW	Vic	SA	Tas
Current week	150	50	47	49	42
12-13 financial YTD	70	56	61	73	49
13-14 financial YTD	65	55	58	76	43

Longer-term statistics tracking average spot market prices are available on the AER website.

## Spot market price forecast variations

The AER is required under the National Electricity Rules to determine whether there is a significant variation between the forecast spot price published by the Australian Energy Market Operator (AEMO) and the actual spot price and, if there is a variation, state why the AER considers the significant price variation occurred. It is not unusual for there to be significant variations as demand forecasts vary and participants react to changing market conditions. A key focus is whether the actual price differs significantly from the forecast price either four or 12 hours ahead. These timeframes have been chosen as indicative of the time frames within which different technology types may be able to commit (intermediate plant within four hours and slow start plant within 12 hours).

There were 76 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2013 of 97 counts and the average in 2012 of 60. Reasons for the variations for this week are summarised in Table 2. Based on AER analysis, the table summarises (as a percentage) the number of times when the actual price differs significantly from the forecast price four or 12 hours ahead and the major reason for that variation. The reasons are classified as availability (which means that there is a change in the total quantity or price offered for generation), demand forecast inaccuracy, changes to network capability or as a combination of factors (when there is not one dominant reason). An instance where both four and 12 hour ahead forecasts differ significantly from the actual price will be counted as two variations.

#### Table 2: Reasons for variations between forecast and actual prices

	Availability	Demand	Network	Combination
% of total above forecast	13	25	0	11
% of total below forecast	20	29	0	2

Note: Due to rounding, the total may not be exactly 100 per cent

## Generation and bidding patterns

The AER reviews generator bidding as part of its market monitoring to better understand the drivers behind price variations. Figures 3 to 7 show, the total generation dispatched and the amounts of capacity offered within certain price bands for each 30 minute trading interval in each region.

The red ellipses on figure 3 highlight the periods in Queensland where rebids reduced the low priced available capacity. This repeated rebidding corresponds with the price spikes in that region.

The red ellipse on figure 6 highlight the periods in South Australia where there was reduced low priced capacity (around 200 MW) due to plant issues at Osborne.







Figure 4: New South Wales generation and bidding patterns







Figure 6: South Australia generation and bidding patterns

Figure 7: Tasmania generation and bidding patterns



## Frequency control ancillary services markets

Frequency control ancillary services (FCAS) are required to maintain the frequency of the power system within the frequency operating standards. Raise and lower regulation services are used to address small fluctuations in frequency, while raise and lower contingency services are used to address larger frequency deviations. There are six contingency services:

- fast services, which arrest a frequency deviation within the first 6 seconds of a contingent event (raise and lower 6 second)
- slow services, which stabilise frequency deviations within 60 seconds of the event (raise and lower 60 second)
- delayed services, which return the frequency to the normal operating band within 5 minutes (raise and lower 5 minute) at which time the five minute dispatch process will take effect.

The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a "causer pays" basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was \$206 500 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$132 000 or less than 2 per cent of energy turnover in Tasmania. This was driven by a short spike for local services on 20 February 2014.

In response to bushfires in the area, from 6.30 pm to 7.15 pm AEMO reclassified the George Town – Sheffield and George Town - Hadspen lines as credible contingencies. This led to a number of Tasmania units being constrained off. As a result, spot prices were significantly higher in Tasmania compared to Victoria leading to a reduced flow on Basslink to less than 50 MW. This meant that Basslink was within its no-go-zone and unable to transfer FCAS. This resulted in the Tasmanian FCAS requirement being sourced from local generators from 6.40 pm to 6.50pm. The Tasmanian lower regulation price reached the market price cap of \$13 100/MWh at 6.40 pm and 6.45 pm.

Figure 8 shows the daily breakdown of cost for each FCAS for the NEM, as well as the average cost since the beginning of the previous financial year.



### Figure 8: Daily frequency control ancillary service cost

## Detailed market analysis of significant price events

We provide more detailed analysis of events where the spot price was greater than three times the weekly average price in a region and above \$250/MWh or was below -\$100/MWh. There were thirteen occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$150/MWh and above \$250/MWh.

In each of the occasions outlined below, Queensland import capability was reduced as a result of the long term outage of Directlink (due to a planned outage since 6 August 2013).

Time	Price (\$/MWh)			Demand (MW)				Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	
5.00 pm	2021.13	58.72	53.19	7423	7388	7341	10 292	10 543	10 678	
7.00 pm	1796.52	55	52.90	7556	7334	7302	10 540	10 525	10 683	

#### Sunday, 16 February

#### 5 pm trading interval

Demand was about 222 MW greater than that forecast four hours ahead and available capacity close to forecast.

At 4.46 pm, effective from 4.55 pm, CS energy rebid 120 MW of capacity across its portfolio from below \$50/MWh to above \$11 700/MWh. The reason provided was '1641A interconnector constraint - binding in PD-SL'.

The 5 minute price increased from \$60/MWh at 4.50 pm to \$11,850/MWh at 4.55 pm. A number of participants responded to the high dispatch price. Amongst others, CS Energy rebid 500 MW of capacity at Wivenhoe at zero (250 MW from an increase in available capacity and 250 MW down from prices above \$11,700/MWh). The dispatch price dropped to below \$45/MWh at 5 pm.

There was no other significant rebid which contributed to the high dispatch price, which saw the spot price reach \$2021 at 5 pm.

## 7.00 pm trading interval

Conditions at 7 pm saw demand close to forecast and available capacity 250 MW less than that forecast four hours ahead.

At 6.53 pm, effective for the 7 pm dispatch interval only, CS Energy rebid 425 MW of capacity at Gladstone from prices below \$60/MWh to the price cap. The reason provided was '1852A interconnector constraint-SL'.

The 5 minute price increased from \$60/MWh at 6.55 pm to \$10 499.95/MWh at 7 pm. No other rebids occurred in the respective trading interval and the high dispatch price in the dispatch intervals saw the \$1767/MWh at 7 pm.

#### Monday, 17 February

Time	Price (\$/MWh)			Demand (MW)			Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
5 pm	1796.39	60.04	239.95	7855	7985	8016	10 609	10 740	10 755

Demand was close to the four hour forecast. Availability was more than 100 MW below the four hour forecast.

At 4.51 pm, effective only for the 5 pm dispatch interval, a rebid by Arrow Energy for Braemar units shifted 150 MW from below \$50/MWh to above \$10,700/MWh. The reason provided was '1650A change in 5min PD: QNI flow SL'.

At 4.53 pm, effective from 5 pm, for the 5 pm and 5.30 pm trading intervals CS Energy rebid 360 MW of its capacity at Gladstone and Callide from below \$60/MWh to the price cap. The reason provided was '1651A interconnector constraint – QNI close to binding SL'.

The 5 minute price increased from around \$55/MWh at 4.55 pm to \$10,499.95/MWh at 5 pm. Prices dropped to around \$55/MWh in the following dispatch interval, when a number of units were no longer up ramp rate limited.

The high dispatch price in the dispatch interval saw the spot price reach \$1796/MWh at 5 pm.

#### Wednesday, 19 February

Time	Price (\$/MWh)				Demand (M)	N)	Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
4.00 pm	1964.19	62.91	248.50	7630	7675	7720	10 550	10 661	10 615
5.30 pm	1793.37	56.89	239.95	7782	7657	7700	10 580	10 678	10 638

#### 4 pm trading interval

Demand was close to the four hour forecast. Availability was around 100MW below the four hour forecast.

At 3.51 pm, effective for the 4 pm dispatch interval only, Origin Energy rebid 181 MW at Mt Stuart from the floor price to around \$12,000/MWh. The reason provided was '1548A dec qld dem - 5pd 7625mw < 30pd 7660mw @ 1600 SL'.

At 3.52 pm, effective only for the 4 pm dispatch interval, Callide Power rebid 40 MW from below \$50/MWh to the price cap. The reason provided was '1551A price lower than 30 min forecast'.

At 3.53 pm, effective only for the 4 pm dispatch interval, CS Energy rebid 380 MW at Gladstone and Wivenhoe from below \$55/MWh to the price cap. The reason provided was '1551A dispatch price lower than 30min forecast-SL'.

The 5 minute price increased from around \$60/MWh at 3.55 pm to \$11,499/MWh at 4 pm. Prices dropped to around \$60/MWh in the following dispatch interval. The high dispatch price saw the spot price reach \$1964/MWh at 4pm. There was no other significant rebidding.

### 5.30 pm trading interval

Demand was around 100 MW greater than the four hour forecast. Availability was around 100MW below the four hour forecast.

At 5.21 pm, effective 5.30 pm, a rebid from Stanwell across its portfolio shifted 288 MW from below \$50/MWh to the price cap. The reason provided was '1719A material change in QLD generation: Oakey DI1715 SL'.

At 5.22 pm, effective 5.30pm, CS Energy rebid 260 MW at Wivenhoe from below \$50/MWh to above \$11,700/MWh. The reason provided was '1719A dispatch price higher than 30min forecast-SL'.

The 5 minute price increased from around \$53/MWh at 5.25 pm to \$10,499/MWh at 4 pm. Prices dropped to around \$60/MWh in the following dispatch interval. The high dispatch price saw the spot price reach \$1793/MWh at 5.30pm.There was no other significant rebidding.

Time	Price (\$/MWh)				Demand (M)	W)	Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
2 pm	2228.98	60.04	119.50	7712	7839	7764	10 266	10 752	10 752
5 pm	2228.88	59.95	82.66	8039	8058	7996	10 768	10 715	10 754

## Thursday, 20 February

#### 2 pm trading interval

Demand was close to the forecasts. Availability was around 500 MW below the forecasts.

At 11.54 am, Callide reduced the availability at Callide unit 4 by 406 MW. Around 300 MW of this capacity was priced at the price floor. The reason provided was '1154P updated ERTS'.

At 1.51 pm, effective for the 2 pm dispatch interval only, CS Energy rebid 495 MW across its portfolio from below \$55/MWh to the price cap. The reason provided was '1350A interconnector constraint-QNI close to binding north – SL'.

The 5 minute price increased from \$53/MWh at 1.55 pm to \$13,100/MWh at 2 pm. Prices dropped to \$53/MWh in the following dispatch interval. This high dispatch price saw the spot price reach \$2228/MWh at 2 pm.

## 5 pm trading interval

Demand and availability were close to the forecasts.

At 4.46 pm, effective for the 4.55 pm and 5 pm dispatch intervals only, CS Energy rebid 675 MW across its portfolio from below \$55 MWh to the price cap. The reason provided was '1637A dispatch price lower than 30min forecast-SL'

At 4.51 pm, effective for the 5 pm dispatch interval only, Arrow Energy rebid 168 MW at Braemar from below \$1500/MWh to above \$10,500/MWh. The reason provided was '1650A change in QNI flow SL'.

At 4.51 pm, effective for the 5 pm dispatch interval only, Stanwell rebid 233 MW across its portfolio from below \$50/MWh to the price cap. The reason provided was '1651A material change in QLD generation: Oakey DI 1645'.

The 5 minute price increased from around \$70/MWh at 4.55 pm to \$13,100/MWh at 5 pm. Prices dropped to around \$46/MWh in the following dispatch interval. The high dispatch price saw the spot price reach \$2228/MWh at 5 pm.

## Friday, 21 February

Time	Price (\$/MWh)				Demand (M)	N)	Availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
9:30 am	2230.35	60.04	60.00	7377	7287	7270	10 738	10 703	10 703
12 pm	1955.96	119.50	119.50	7707	7638	7571	10 606	10 703	10 703
1 pm	2226.02	53.10	59.95	7829	7852	7717	10 595	10 735	10 700
2:30 pm	1950.85	59.32	158.95	7967	7967	7967	10 617	10 735	10 700
3:30 pm	1947.19	59.48	158.95	7869	7895	7968	10 614	10 732	10 697
4:30 pm	2222.32	54.45	248.50	7979	7902	8017	10 630	10 758	10 700

#### 9.30am trading interval

Demand and availability were close to the forecasts.

At 9.23 am, effective for the 9.30 am dispatch interval only, Stanwell rebid 240 MW, across its portfolio, from below 60/MWh to the price cap. The reason provided was 0922A QNI binding north – SL'

At 9.24 am, effective for the 9.30 am dispatch interval only, CS Energy rebid 225 MW of Gladstone capacity from \$52/MWh to the price cap. The reason provided was '0923A interconnector constraint-QNI binding-SL'.

Consequently the 5 minute price increased from around \$60/MWh at 9.25 pm to \$13,100/MWh at 9.30 am. Prices dropped to around \$52/MWh in the following dispatch interval.

The high dispatch price in the dispatch interval saw the spot price reach \$2230/MWh at 9.30am.

## 12 pm trading interval

Demand and availability were close to the forecasts.

At 11.47 am, effective for the 11.55 am and 12 noon dispatch intervals only, Stanwell rebid 260 MW across its portfolio from below \$60/MWh to the price cap. The reason provided was '1147A QLD 5min demand above 30min PD @ 1145HRS'

At 11.50 am, effective for the 12 pm dispatch interval only, Origin rebid 110 MW atMt Stuart from the floor price to the price cap. The reason provided was '1150A constraint management - N^^Q\_NIL\_B1 SL'.

At 11.50 am, effective for the 12 pm dispatch interval only, CS Energy rebid 200 MW of capacity at Gladstone from below \$50/MWh to the price cap. The reason provided was '1150A Interconnector constraint – change in QNI flow'.

The 5 minute price increased from around \$53/MWh at 11.55 pm to \$11 450/MWh at 12 pm. Prices dropped to around \$50/MWh in the following dispatch interval. The high dispatch price in the dispatch interval saw the spot price reach \$1955/MWh at 12 pm.

## 1 pm trading interval

Demand was close to the forecasts. Availability was around 100 MW below.

At 12.51 pm, effective for the 1 pm dispatch interval only, CS Energy rebid 365 MW across its portfolio from below \$50/MWh to the price cap. The reason provided was '1250A Interconnector constraint-change in qni flow- SL'.

At 12.53 pm, effective for the 1 pm dispatch interval only, Stanwell rebid 316 MW across its portfolio from below \$60/MWh to the price cap. The reason provided was '1251A reduction in QLD generation - Millmerran PS – SL'.

The 5 minute price increased from around \$55/MWh at 12.55 pm to \$13,100/MWh at 1 pm. Prices dropped to around \$50/MWh in the following dispatch interval. The the high dispatch price in the dispatch interval saw the spot price reach \$2226/MWh at 1 pm.

#### 2.30 pm trading interval

Demand and availability were close to the forecasts.

At 2.22 pm, effective for the 2.30 pm dispatch interval only, Stanwell rebid 253 MW across its portfolio from below \$60/MWh to the price cap. The reason provided was '1421A material change in QNI flow DI1425 SL'.

At 2.22 pm, effective for the 2.30 pm dispatch interval only, CS Energy rebid 260 MW at Callide and Wivenhoe from below \$45/MWh to the price cap. The reason provided was '1420P technical issues-coal quality-SL'.

The 5 minute price increased from around \$52/MWh at 2.25 pm to \$11 450/MWh at 2.30 pm. Prices dropped to around \$50/MWh in the following dispatch interval. The high dispatch price in the dispatch interval saw the spot price reach \$1950/MWh at 2.30 pm.

## 3.30 pm Trading Interval

Demand and availability were close to forecast.

At 3.15 pm, effective from 3.25 pm, Origin rebid 120 MW at Mt Stuart from the floor price to the price cap. The reason provided was '1505A constraint management - N^^Q\_NIL\_B1 SL'.

At 3.20 pm, effective for the 3.30 pm dispatch interval only, CS Energy rebid 425 MW across its portfolio from below \$45/MWh to the price cap. The reason provided was '1520A interconnector constraint-change in QNI flow-SL'.

At 3.22 pm, effective for the 3.30 pm dispatch interval only, Stanwell rebid 253 MW across its portfolio from below \$60/MWh to the price cap. The reason provided was '1522A material change in QLD generation: Braemer SL'.

The 5 minute price increased from around \$46/MWh at 3.25 pm to \$11 450/MWh at 3.30 pm. Prices dropped to around \$46/MWh in the following dispatch interval. The high dispatch price in the dispatch interval saw the spot price reach \$1947/MWh at 3.30 pm.

## 4.30 pm Trading Interval

Demand was close to the forecasts. Availability was more than 100MW below the four hour forecast.

At 4.10 pm, effective from 4.20 pm, Origin rebid 175 MW at Mt Stuart from the floor price to the price cap. The reason provided was '1609A INC QLD DEM - 5MPD 8004MW > 30MPD 7875MW @1630'

At 4.21 pm, effective for the 4.30 pm dispatch interval only, Stanwell rebid 281 MW of capacity across its portfolio from below \$60MWh to the price cap. The reason provided was '1621A change in QLD demand P5@1620 -59MW: P5 1615 V P5 1620 – SL'.

At 4.22 pm, effective for the 4.30 pm dispatch interval only, CS energy rebid 425 MW across its portfolio from below \$44/MWh to the price cap. The reason provided was '1620A interconnector constraint-change in QNI flow-SL'.

At 4.22 pm, effective for the 4.30 pm dispatch interval only, Callide rebid 40 MW at Callide B from the floor price to the price cap. The reason provided was '1617A change in 5MPD QNI flow - 201402211615/20 - SL'

The 5 minute price increased from around \$47/MWh at 4.25 pm to \$13 100/MWh at 4.30 pm. Prices dropped to around \$45/MWh in the following dispatch interval. The high dispatch price in the dispatch interval saw the spot price reach \$2222/MWh at 4.30 pm.

## **Financial markets**

Figure 9 shows for all mainland regions the prices for base contracts (and total traded quantities for the week) for each quarter for the next four financial years.



Figure 9: Quarterly base future prices Q1 2014 - Q4 2017

Source: ASXEnergy.com.au

Figure 10 shows how the price for each regional Quarter 1 2014 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2012 and quarter 1 2013 prices are also shown. The AER notes that data for South Australia is less reliable due to very low numbers of trades.



Figure 10: Price of Q1 2014 base contracts over the past 10 weeks (and the past 2 years)

Note: Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for yearly periods 1 and 2 years prior to the current year

Source: ASXEnergy.com.au

Prices of other financial products (including longer-term price trends) are available in the <u>Performance</u> of the Energy Sector section of our website.

Figure 11 shows how the price for each regional Quarter 1 2014 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2012 and quarter 1 2013 prices are also shown.





Source: ASXEnergy.com.au

Australian Energy Regulator March 2014